

# Needfinding

After Hours: Understanding **Night Shift** Workers



## Meet the Team!



**Sarah Jade Yao**  
CS + PD '25



**Christina Ba**  
CS + Art '26



**Sejoon Chang**  
CS + PD '25



**Evelyn Hur**  
CS + PD '25

# Problem Domain

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## **Why?**

We wanted to address an underserved population's needs—there's currently no solutions in the market. Because we were thinking about health, we realized that this population could be most heavily impacted by our work.

## **How?**

There's existing sleep tracking apps on the market, but often require a physical device or aren't tailored to understanding night shift schedules. We want to create a solution that is specifically for this underserved population.

# Needfinding Methodology

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## Participants and Location

- Recruited participants with **cold emailing and NextDoor posts**
- **Night shift workers** in various locations (three in person, one Zoom), including **on-campus and off-campus**
- Prioritized **diverse group of occupancies** (medicine, police, tutors, healthcare workers)
- **Part-time vs. full-time** night night shift workers
- Eliminated participants who were busy working on shift (fast food workers)

# Needfinding Methodology

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## **Extreme User**

- Tutor: someone that balances school work in the day while working at night

## **Roles and Equipment**

- Conducted 4 interviews: each team member was an interviewer/note taker exactly once. In one interview, we used OtterAI, an online tool for transcription
- Compensated one interviewee via NextDoor

# Interview Questions

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## **Interview Structure**

1. Background
2. Typical Night Shift Routine
3. Life outside of Work
4. Impact on Overall Health
5. Follow-up Questions

# Deputy Ryan R.

Deputy Ryan works with the **Stanford Police Department**, working a 6-month graveyard shift

“Working a graveyard shift never gets easier“



## Q Says

- Works long hours – **shift from 6:30 pm to 4:30 am + 2 hours overtime**
- **6 month rotation system:** 6 months day shift, 6 months night shift
- Works 4x a week, 3x off days
- Other officers **will try to get back to regular circadian rhythm on off-days**, and **transition back and forth** each week
- He has found being **consistent** with his schedule has helped the most
- “Working night shifts is hard no matter what you do”
- “The entire world runs on a daytime schedule.”
- **No one great way to address the 2–3 week adjustment period**
- Found his **transition routine through trial and error:** gradually staying up later
- “The **hardest part about night shifts is the little things:** explaining to your friend you can’t do 11 am brunch, for example.”

## Q Thinks

- **Discipline and consistency** is most important to working these cycles
- Experience working night shifts is the best way to adjust
- Finds it hard to explain what the night shift life is like to day-shifters
- Thinks that **caffeine is awful** for you and would never use it
- Believes that the initial two week transition to night shifts is most **frustrating**
- There is **no one perfect solution to transitioning** to working at night
- The human body isn’t made to work night shifts, and must **take additional measures to adjust**
- It is on him to personally adjust to the shift, **no resources from department**
- Working night shifts is necessary for work reasons but the tradeoff is the convenience of living life during the day
- There **aren’t any long term effects of working night shifts on his health**

## Q Does

- **Doesn’t drink caffeine** / use any other sleep medications
- Has a **strict routine** easing into/out of night shift periods
- **Struggles to schedule business appointments** within traditional 9–5 hours
- **Uses devices** like blackout curtains, eye masks, portable AC to help him sleep during the day
- **Does not use any chemical supplements** to help adjust (melatonin, caffeine)
- Tries to get a full **8 hours of sleep** every day
- Is used to taking the **extra effort** to **make time for his personal life**
- Job entails proactive patrol and response to emergency calls
- Feel more **alert in the beginning of the shift**, and finds it **hard to stay awake later** on (4/5 am)
- Work a **staggered schedule:** other night shifters work different nights

## Q Feels

- **Frustrated** going through 2 week transition period
- **Optimistic** about sleep tracking to help the transitory process
- **“It is what it is” mentality** about working night shifts
- **Accepting** of the fact that he’s giving up the convenience of a day job
- **Values consistency and routine;** believes it is the key to his upkeep health
- Feels **he can assess for himself his wakefulness;** currently doesn’t track sleep
- **Scared** of the “stuff that’s in energy drinks”, **relies** on his personal circadian rhythm
- **Used to** this biannual day shift to night shift switch
- A sense of **unavoidable disconnect** with “day-shifters”
- A sense of **duty** to his job to the point where he is willing to sacrifice a regular life for 6 months of the year.

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Shift from **6:30 pm to 4:30 am** + 2 hours of overtime every working night

Christina Ba

“The entire world runs on a daytime schedule.”

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There is **no one perfect solution** to transitioning to night shifts

Christina Ba

The **human body isn’t built to work overnight**, and the hardest part is the first two weeks of transition

Christina Ba

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- Work a staggered schedule: other night shifters work different nights

**Doesn’t use any sleep or wake aids** (caffeine, melatonin, energy drinks)

Christina Ba

Maintains his overnight schedule even on his off days. Believes **consistency is the key** to adjustment.

Christina Ba

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Feels he can assess for himself his degree of wakefulness, but would **enjoy a tailored sleep tracker**

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# Dr. Rena R.

Rena is a **physician** and **Nocturnist Section Chief** at Stanford Hospital

“I try to block out 4–5 hours to sleep at night but I still find myself waking up”



## Q Says

- Worked nightshifts for **7 years**, working an average of **15 nights a month**
- Eventually **transitioned to daytime work 3 years ago** due to fatigue and burnout
- Still does **2-3 night shifts a month** but night shifts are now more exhausting due to increased patient volumes and busier nights
- Shift lasts from **7pm to 7am**, with the post-shift period involving finishing notes and signing out to the next team.
- **Commute and sign-out time** take away additional time
- Weekend routine is similar to weekday routine because she also **works on weekends**
- Initially ate unhealthy at hospital cafeteria, but started **bringing in own food**
- After transitioning, hard to function during day and think clinically, **thinks better at 3-4am**
- **Early on** in career, **had so much energy: used to exercise and walk her dog** after shift
- When transitioned to day shifts, had very **hard time figuring out when to exercise**
- **Most night shift workers quit** after a while (not sustainable)

## Q Thinks

- **Sleep is important**, especially for night shift workers
- Advises others to prioritize it, **even if they don't feel tired, to maintain a normal circadian rhythm.**
- She is in **good control of her diet/nutrition** since she brings her own food to work
- Transitioning from full-time to part-time night shifts was challenging
- After transition, **difficult functioning and thinking clinically during day**
- After transition, **difficult adjusting to a normal sleep schedule**
- She is **not a morning person**
- Previous studies on health effect of night shift work aren't the best due to variability in night shift schedules and difficulty of conditions conducting good research
- Need better research on health effects of night shift work
- Believes maintaining a **normal circadian rhythm is important**

## Q Does

- Before each shift starts, **signs in** and takes over pager coverage, leading to **immediate interruptions** for lab results and emergencies.
- After the shift, Rita goes home, **takes care of their dog, does laundry, and tries to sleep for a few hours**, usually managing **3-4 hours of sleep**
- If multiple days off in a row, would **sometimes sleep 18+ hours**
- **Spent a lot of time outside to mitigate vitamin D deficiency**
- Now, **eats own small meals** every **3-4 hours**
- Sometimes grabs **snacks from vending machines or eat leftover** food
- Now, tries to block out 4-5 hours of sleep, but still finds herself waking up at night
- Even now, **wakes up** in the middle of the night to **eat**
- After transition to day shifts, **tried working out at night** around 11pm but didn't work out
- Now, **exercises at 5am**

## Q Feels

- Initially found nightshifts **manageable and even enjoyable** but eventually became **fatigued and burnout by 4th year**
- **Refreshing** to even nap for 20 minutes during shift
- Sometimes **exhausted**, leading to excessive sleep (18+ hours) **without feeling rested after**
- Nutrition-wise, **feels in control** by bringing in her own food to her shifts
- Can be **tough/difficult** to eat well since food availability is different at night time
- **Unadjusted** to transitioning from night to day shifts, even after 3 years
- **Uncertain** of when to eat, exercise, sleep etc. after transitioning to day shifts
- **Concerned and empathetic** towards her night shift team since she understands the negative health effects of night shift work long term
- **Concerned** towards night shift workers who have family and personal relationships to maintain

## Q Says

- Worked nightshifts for **7 years**, working an average of **15 nights a month**

Worked nightshifts for 7 years, then transitioned to daytime due to **fatigue and burnout**

Evelyn Hur

**“Hard to function during day and to think clinically.**

Even now, I still find that **I think better at 3, 4am”**

Evelyn Hur

**“I had a hard time figuring out when I should be exercising”**

Evelyn Hur

- **Most night shift workers quit** after a while (not sustainable)

## Q Thinks

- **Sleep is important**, especially for night shift workers
- Advise night shift workers to maintain a normal circadian rhythm if they do
- She believes in maintaining a normal circadian rhythm
- Transitioning from night to day shifts is difficult
- After transitioning to day shifts, she found it easier to function during the day
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- She believes in maintaining a normal circadian rhythm
- Preparing for night shifts is important
- Night shift work is a challenge
- Need better research on health effects of night shift work
- Believes maintaining a **normal circadian rhythm is important**

**Sleep and normal circadian rhythm are important, even if you don't think you feel tired**

Evelyn Hur

She is in **good control of some aspects of her health** such as diet, vitamin D maintenance, exercise etc.

Evelyn Hur

## Q Does

After nightshifts, would **run errands**, then **sleep 3-4hrs**. After transitioning to day, **sleeps 4-5hrs** but keeps **waking up at night**

Evelyn Hur

**Initially ate unhealthy** at cafeteria due to **limited food availability at night**, but started **bringing in own food**

Evelyn Hur

Tried exercising at night, but found that **exercising at 5am works best**

Evelyn Hur

## Q Feels

- Initially found nightshifts **manageable and even enjoyable** but eventually became **fatigued**
- **Refreshed** after night shifts
- Some night shift workers find it **manageable and enjoyable**
- Nutrition is important for night shift workers
- Can be challenging to maintain a normal circadian rhythm
- **Unadjusted** to night shift work
- **Uncertain** about the long-term health effects of night shift work
- **Concerned** about the health effects of night shift work
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Initially found night shifts **manageable and enjoyable** until felt **fatigue and burnout in 4th year**

Evelyn Hur

Overall, feels **unadjusted** to transition and difficult to function during the day. Sometimes feels **exhausted, even after excessive sleep**

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# Calvin C.

Calvin is a **senior at Stanford** studying Econ/Data Science who works as a **high school tutor** with most clients based internationally in Asia.

“Balancing schoolwork and tutoring at night, My sleep becomes fragmented.”



## Q Says

- Says that **Scheduling conflicts**, their nights (and my very early morning)."
- He's been tutoring ACT and AP Economics in Asia well **over 100 hours for the past 8 months**, which has been the main
- "My sleep becomes fragmented" – says that he would do **three hour "naps" 1-2 times a day**
- Despite **excessive consuming of caffeine**, he still is somehow **always exhausted**.
- "I **cannot fall asleep at night** because of how **fragmented my sleep schedule** is"
- He needs to continuously drink caffeine to balance both school works
- "It's pretty **bad to focus in class**."
- "**Melatonin is not working**."
- Despite his strenuous work, he really wants to go back to a normal sleep schedule: "I really want to go back to a circadian rhythm."
- Wants to find a way where he can "perform in school better with this sleep schedule"

## Q Thinks

- Believes that the night shift is **detrimental** to his health and academic performance.
- Thinks **fragmented sleep** is an unfortunate but unavoidable consequence of his schedule.
- Considers caffeine a **necessary evil** for survival during shifts.
- Desires a return to a normal circadian rhythm and structured meals.
- May feel pressured to keep up with both **work** and **academic** responsibilities.
- Feels frustrated with the ineffectiveness of melatonin for sleep.
- Recognizes the impact of night shifts on **social life** and relationships.
- Acknowledges the need for tools to help manage sleep better.
- Understands the link between physical health and **sleep quality**.
- Believes that improved sleep could enhance his overall life satisfaction.

## Q Does

- Doesn't use any **sleep medications** because they don't work (does drink caffeine)
- Has a strict routine easing into/out of night shift periods
- Struggles to schedule social/business appointments within traditional 9–5 hours
- Uses devices like **blackout curtains**, eye masks, portable fan to help him sleep during the day, otherwise he struggles to sleep even with melatonin
- Tries to get 7 hours of sleep every day, but very **fragmented**
- Is used to taking the extra effort to make time for his personal and social life
- Feel more alert at the **beginning** of the shift, and finds it hard to stay awake later on (4/5 am)
- Stays in his dorm most of the time instead of going out and socializing with friends
- Uses his **Apple Watch** to track his **heart levels** (not his sleep because it's bad at tracking it), and it increased by 20%

## Q Feels

- **Exhaustion** from inconsistent sleep patterns.
- He's constantly frustrated over not being able to fall asleep easily.
- Lots of anxiety about academic performance due to fatigue.
- **Stress** from **balancing** work and personal life.
- He feels some sadness over missing social opportunities with friends, and wishes to have more chances to do so.
- **Overwhelmed** by the need to manage multiple responsibilities.
- Disappointment in the **ineffectiveness** of **sleep aids** like melatonin.
- Hopefulness for a potential return to a healthier sleep schedule.
- He feels **concern** about the long-term health implications of night shifts.
- I can tell he feels some real desperation for a more structured daily routine.

## Q Says

- Says that **Scheduling conflicts**, their nights (and my very early morning)."
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- want to go back to a circadian rhythm."
- Wants to find a way where he can "perform in school better with this sleep schedule"

His schedule is completely **flipped**, which causes him to rely heavily on **caffeine** (pre-workout)

Sejoon Chang

His inability to sleep at night is a major frustration that affects both his **physical** and **mental** well-being.

Sejoon Chang

## Q Thinks

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Believes that a better sleep schedule and **circadian rhythm** would significantly improve his academic performance and overall quality of life.

Sejoon Chang

He thinks **fragmented sleep** is his biggest hurdle and wishes he could find a more effective solution for managing it, such as better sleep tracking or cycles.

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He tries to fit **homework** and **tasks** around his irregular schedule but still struggles with fatigue, productivity, and social life.

Sejoon Chang

Constantly uses **caffeine** and **technology** (like his Apple Watch) to compensate for lack of sleep, showing an effort to manage his **health** despite the circumstances.

Sejoon Chang

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He feels exhausted and frustrated from not being able to get enough restorative sleep, leading to frequent **brain fog** and **sluggishness** during work.

Sejoon Chang

He experiences anxiety and **stress** from feeling like his night shift work is affecting his ability to **balance academics**, social life, and physical health.

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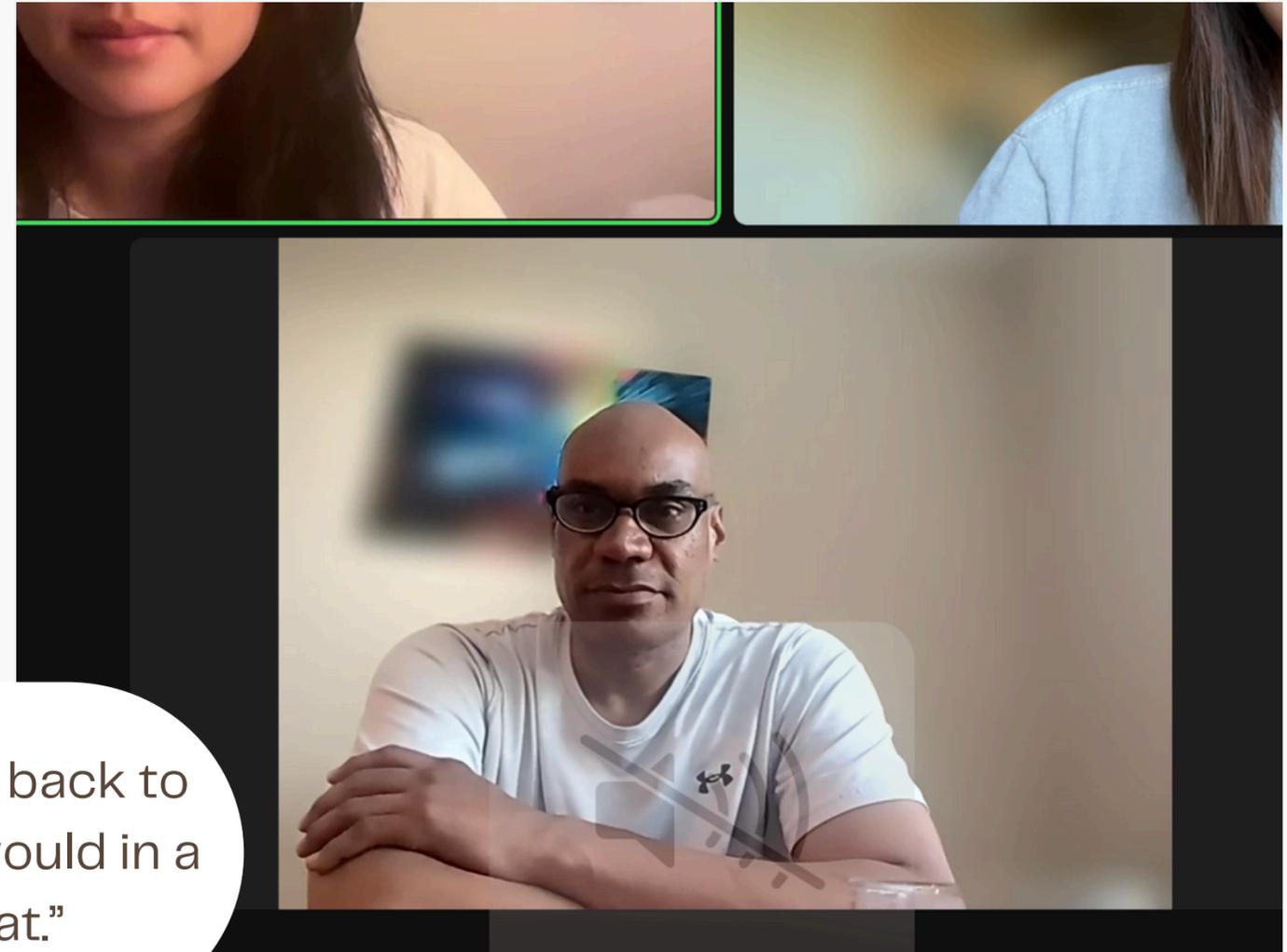
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# Drew D.

Drew works **patient transport** at **Stanford Hospital** 5 nights a week

“If I could go back to day shifts, I would in a heartbeat.”



## Q Says

- Main pull to job is financial: bonus \$500–800 for working night shift
- Has been with Stanford facilities since 2012: housing covered, used to work @ Lakeside Dining. Patient transporter for 21 months.
- Works 5 night shifts a week, **more than other average night shift jobs**
- It is hard to accommodate family and other personal responsibilities.
- “Definitely a weird feeling getting up when everyone’s going to bed. It’s hard to explain.”
- On off days, does meal prep, chores, shopping, appointments, family visit, workout. “**Odd to do these at like 3 am**”.
- “I had an interview at work at 12 pm in the daytime and it was **hard to focus**”.
- Sleep pattern is “just unnatural for your body”. Hard to adjust during/after time off.
- “I use a few meditation VR apps to help calm down and sleep during the day.”
- “**My social life is basically nonexistent at this point.**”
- “I would go back to a daytime schedule in a heartbeat.”

## Q Does

- Works **10:30 pm to 7 am**, 5x a week with 2 weekend days (Wednesday and Thursday)
- Barely sees his family and friends, with almost none social life
- Tries to keep a consistent sleep schedule on off days, because otherwise there is a lasting effect
- Still not feel completely adjusted to night shifts, and it’s been 2 years
- Find it **difficult to set things up logistically with day-shifters** due to time differences
- Uses stretching and VR meditation apps to help him calm down and sleep during the day
- Physically healthier as a result of actual job, not hours/cycle
- Use Google Fit minimally, has other apps but doesn’t use them as much
- Had sleep apnea a few years ago
- **Has caffeine but tries not to take too much.** It is helpful to push through nights of short staff and overtime.
- Use Reddit, NYT games, etc to keep himself alert throughout his shift.

## Q Thinks

- Trying to get out of this job, it is not ideal for him at all
- He has to work this job for **financial reasons**, and that is the only thing keeping him there
- He hasn’t fully adjusted -- there is much room for improvement in his current cycle
- But, his sleep cycle is better than before (when he had sleep apnea).
- **Caffeine is an issue** -- tries to stay away from having too much of it, especially in that environment
- He has it easier than other night shift workers with families and wives -- he doesn’t have
- A caffeine tracker would be a helpful feature to have in the app.
- Alertness wanes throughout shift but hours are decent
- It would be **impossible to keep switching in and out of a night schedule** because of his 5x a week workday
- Not using his rest days -- just sleeping through them
- The job has helped him out physically since it’s physically demanding

## Q Feels

- **A sense of dependency on the job, financially** and because Stanford gives him housing
- Concern for his physical health: left previous job due to health reasons, tracks health
- **Disconnect from the daytime world**, and separation from the rest of the world
- His situation puts him in a hard spot for any regular activities
- **Difficulty balancing his professional and personal lives**
- Pressure from his work environment to take large amounts of caffeine
- A lack of financial freedom. Shackled to a job he doesn’t prefer because of financial reasons
- Optimistic for an app to help him adjust
- Relieved he is not working this job with other responsibilities (family, etc)
- **Accepting of his current situation, but seems more than happy to leave it.**

## Q Says

- Main pull to job is financial: bonus \$500–800 for working night shift
- Has been with Stanford facilities since 2012: housing covered, used to work @ Lakeside Dining. Patient transporter for 91 months.
- Works 5 days a week, 10:30 pm to 7 am, 5x a week with 2 weekend days (Wednesday and Thursday)
- It is hard to get out of this job, it is not ideal for him at all
- “Definitely not a good sleep pattern for your body”
- On off days, he uses his rest days to catch up on sleep, shopping, workout. ““Odd to do these things on a day off.”
- “I had a hard time focusing in the day”
- Sleep pattern is unnatural for your body”
- “I use a fitness app to help calm down before he sleeps”
- “My social life is basically nonexistent at this point.”
- “I would go back to a daytime schedule in a heartbeat.”

“This sleep pattern is **unnatural** for your body”

Sarah Jade Yao

“I would go back to daytime shifts in a **heartbeat.**”

Sarah Jade Yao

## Q Thinks

- Trying to get out of this job, it is not ideal for him at all
- He has to work this job for financial reasons, and that is the only thing keeping him there
- He has to work this job for financial reasons, and that is the only thing keeping him there
- But he has to work this job for financial reasons, and that is the only thing keeping him there
- Cafeteria, patient transporter, etc. ““Odd to do these things on a day off.”
- He has to work this job for financial reasons, and that is the only thing keeping him there
- A lack of focus in the day”
- Alertness, etc. ““Odd to do these things on a day off.”
- It was a week workday
- Not using his rest days -- just sleeping through them
- The job has helped him out physically since its physically demanding

Trying to get out of the job **because it is unideal** for him

Sarah Jade Yao

Doesn't think rest days are truly leisure days but rather uses it to **catch up on sleep**

Sarah Jade Yao

## Q Does

- Works 10:30 pm to 7 am, 5x a week with 2 weekend days (Wednesday and Thursday)
- Barely sees his family and friends with a almost none social life
- Uses **stretching and VR meditation app** to help him calm down before he sleeps
- Keeps himself awake through playing **NYT games** and **Reddit** (scrolling apps)
- Use Reddit, NYT games, etc to keep himself alert throughout his shift.

Uses **stretching and VR meditation app** to help him calm down before he sleeps

Sarah Jade Yao

Keeps himself awake through playing **NYT games** and **Reddit** (scrolling apps)

Sarah Jade Yao

## Q Feels

- A sense of dependency on the job, financially and because Stanford gives him housing
- Concern for his physical health: left previous job due to physical health
- Discomfort, etc. ““Odd to do these things on a day off.”
- His situation is a lasting difference
- Difficult to get out of this job, it is not ideal for him at all
- Pressure, etc. ““Odd to do these things on a day off.”
- A lack of focus in the day”
- Optimistic about an app that might help him adjust
- Relieved of his current situation, but seems more than happy to leave it.
- Accepting of his current situation, but seems more than happy to leave it.

A sense of **dependency** for the job **financially** and because of housing

Sarah Jade Yao

Feels **optimistic** about an app that might help him adjust

Sarah Jade Yao



# Key Insights

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- Workers agreed that night shift work has **somewhat impacted their quality of life with varying degrees**
- Workers agreed that for those with family and friends, **social life is difficult to maintain**
- Workers find it **most difficult to transition from night to day shifts** (both part-time switching and full transitions)
- Workers **seek consistency or routine**
- No one perfect solution: Workers had **various and highly personalized methods and routines** to maintain their health and wellbeing

## Q What's Next?

- 1 Develop POVs based on interview findings
- 2 2 additional interviews for further insights
- 3 Brainstorm HMWs based on empathy maps
- 4 Evaluate “how might we...” ideas as a team

# Appendix

- Interview Questions
- Interview Notes – Ryan R, Deputy
- Interview Notes – Rena R, Physician
- Interview Notes – Drew D, Hospital worker
- Interview Notes – Calvin, Tutor

That's a wrap!

Thank you for  
listening.